AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A composite structure subassembly comprising:

a curvilinear sheet metal portion comprising a material, said material being one of superplastically deformed or quick plastically deformed; and

a metal foam precursor comprising a mixture of metal powder and a blowing agent disposed on said curvilinear sheet metal; ~~wherein said metal foam precursor is adapted to release a blowing agent gas from within said metal foam precursor and into an ambient environment of a forming tool cavity,~~ said precursor being applied prior to said one of superplastic or quick plastic deforming.

2. (previously presented) The composite subassembly of Claim 1, wherein said metal powder is an alloy metal powder alloy.

3. (cancelled)

4. (original) The composite subassembly of Claim 1, wherein said sheet metal portion comprises aluminum.

5. (original) The composite subassembly of Claim 2, wherein said sheet metal portion comprises aluminum.

6. (currently amended) A composite structure comprising:

a first curvilinear sheet metal portion formed of a material, said material being one of superplastically deformed or quick plastically deformed; and

a metal foam portion fused to a surface of said curvilinear sheet metal portion; ~~wherein said metal foam precursor is adapted to release a blowing agent gas from within said metal foam precursor and into to an ambient environment of a forming tool cavity,~~ said metal foam portion being fused to said surface prior to said one of superplastic or quick plastic deforming.

7. (original) The composite structure of Claim 6, wherein said metal foam comprises an aluminum alloy.

8. (original) The composite structure of Claim 6, wherein said metal foam comprises a plurality of solid metallic microphases.

9. (original) The composite structure of Claim 6, wherein said sheet metal portion comprises aluminum.

10. (original) The composite structure of Claim 6 further comprising a second curvilinear sheet metal portion fused to a surface of the metal foam portion.

11. (currently amended) A method for making a composite structure comprising:

providing a forming tool defining a cavity;

providing a first sheet metal layer comprising a superplastically formable material;

adhering a metal foam precursor layer to said first sheet metal layer to form a precursor structure, said precursor layer comprising a mixture of metal powder and a blowing agent;

disposing said precursor structure within said forming tool cavity;

heating said precursor structure to a temperature sufficient for superplastic forming within said forming tool cavity;

applying hydrostatic pressure to one side of said superplastically deformable material within said forming tool cavity;

superplastically forming said precursor structure after adhering said metal foam precursor layer within said forming tool cavity; and

heating said formed precursor structure to a foaming temperature sufficient to foam said metal foam precursor portion and to fuse the resultant metallic foam to said first sheet metal layer within said forming tool cavity; wherein the resultant metallic foam is fused to said first sheet metal layer after said superplastic forming of said first sheet metal layer;

~~wherein throughout transformation of said metal foam precursor to said metal foam, a blowing agent gas is released from within said metal foam precursor and into an ambient environment of a forming tool cavity~~.

12. (original) The method of Claim 11, wherein said metal powder comprises a metal powder alloy.

13. (original) The method of Claim 11, wherein said first sheet metal comprises a superplastically formable material.

14. (original) The method of Claim 12, wherein said first sheet metal portion comprises aluminum.

15. (cancelled)

16. (original) The method according to Claim 12 further comprising coupling a second sheet metal layer to the foam precursor.

17. (currently amended) A method for making energy absorbing padding for use in vehicles, comprising:

providing a forming tool defining a cavity;

providing a first aluminum sheet metal having a perimeter profile, an upper surface and a lower surface;

adhering a metal foam precursor portion to a surface of said foam sheet to form a first energy absorbing precursor structure, said foam precursor portion comprising a mixture of aluminum powder and a blowing agent of TiH_2;

adhering a second aluminum sheet metal to said metal foam precursor portion to form a second energy absorbing precursor structure;

disposing said precursor structure within said forming tool cavity;

heating said second precursor structure to between about 450 degrees C and about 600 degrees C within said forming tool cavity;

applying gas pressure to said second energy absorbing precursor structure so as to superplastically form said energy absorbing precursor structure to a desired curvilinear shape within said forming tool cavity;

heating said precursor structure to a foaming temperature sufficient to foam said metal foam precursor within said forming tool cavity; and

sustaining the temperature of said precursor structure at foaming temperature for a time sufficient to foam said metal foam precursor portion into a desired shape and to fuse the resultant metallic foam to both said first and said second aluminum metal sheets within said forming tool cavity;

wherein said step of applying gas pressure to said second energy absorbing precursor is after said step of adhering a metal foam precursor portion ~~and further wherein throughout transformation of said metal foam precursor to said metal foam, a blowing agent gas is released from within the metal foam precursor and into an ambient environment of a forming tool cavity~~.